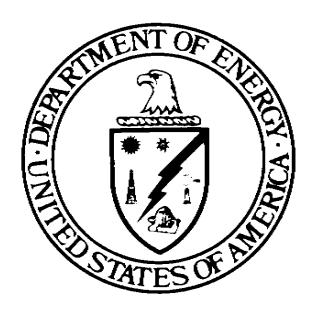
Office of Oversight Review of the Occupational Medicine Program at Brookhaven National Laboratory



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Office of Environment, Safety and Health

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ACRONYMS

AAAHC Accreditation Association for Ambulatory Health Care

BNL Brookhaven National laboratory
BHG Brookhaven Group / DOE Site Office

BSA Brookhaven Science Associates

DOE Department of Energy

ES&H Environment, Safety, and Health ISM Integrated Safety Management

SBMS Standards Based Management System

OFFICE OF OVERSIGHT REVIEW OF THE OCCUPATIONAL MEDICINE PROGRAM AT BROOKHAVEN NATIONAL LABORATORY

1.0 INTRODUCTION

This report provides site-specific results on a Department of Energy (DOE) Office of Oversight review of the occupational medicine program at Brookhaven National Laboratory (BNL). The review at BNL is one portion of an independent oversight review of occupational medicine programs across the complex. The goal of this review is to identify site-specific and DOE-wide issues that require management attention and to provide a foundation for improving occupational medicine program policy and site performance.

Background

The mission of the Office of Oversight includes evaluation and analysis of DOE policies and programs in the areas of environment, safety, health, safeguards, and security. As an important element of a DOE worker safety and health program, occupational medicine programs are included within the scope of selected Office of Oversight assessment activities.

Various Office of Oversight assessments have identified weaknesses in some aspects of occupational medicine programs at several sites. For example, an Oversight evaluation of emergency management across the DOE complex highlighted weaknesses in the interface between occupational medicine programs and emergency management programs at several sites. Because of such weaknesses, some sites may not be adequately prepared to provide timely and effective medical treatment to workers who have been injured or exposed to hazardous materials (e.g., information on the hazardous materials may not be readily available at site or local medical treatment facilities). Similarly, reviews of occupational medicine programs at individual sites during Office of Oversight safety management evaluations indicated that occupational medicine programs at some sites are not accomplishing all of their objectives.

Collectively, the assessment results indicated a need for a more comprehensive review of occupational medicine programs. Consequently, the Office of Oversight is performing a two-phase review of occupational medicine programs across the complex. The first phase of the review, encompassing three sites, was completed in November 1998. An interim report issued in January 1999 identified trends and issues that warrant additional review. In this second phase, the Office of Oversight will evaluate additional sites during calendar year 1999. A final report will be prepared after the review of the additional sites is complete.

OVERVIEW OF BROOKHAVEN NATIONAL LABORATORY AND ITS OCCUPATIONAL MEDICINE PROGRAM

Activities: Established in 1947, BNL's mission is to conceive of, design, build, and operate large, complex user research facilities and to carry out both basic and applied research in energy-related physical, life, and environmental sciences. Science, education, and technology transfer are emphasized. BNL facilities include a Category A nuclear reactor, several particle accelerators, facilities for waste processing, and a variety of research support buildings.

Budget: BNL funding for fiscal year (FY) 1998 was \$347 million. The anticipated budget for FY 1999 is about \$344 million. The occupational medicine program budget for FY 1998 was \$1.8 million. The average health-related cost per employee is about \$500.

Site: BNL occupies 5,300 acres in Suffolk County on Long Island, New York. The site is approximately 60 miles east of New York City. Much of the land area adjacent to the site remains forested or cultivated. The U.S. Army used the site during World Wars I and II, when it was called Camp Upton.

Staff and Visitors: The BNL site currently has approximately 3,200 employees. About 1,000 visitors per year use the various research facilities located on the BNL site. Some visiting scientists and other site users who are stationed at BNL for extended periods live in BNL residential buildings and use BNL occupational medicine services.

Organizations: The cognizant secretarial office for BNL is the DOE Office of Science. The Offices of Environmental Management; Nuclear Energy, Science and Technology; Nonproliferation and National Security; and Energy Efficiency and Renewable Energy fund programs at BNL. BNL contract activities are managed by the Brookhaven Group (BHG), which receives guidance from DOE program offices and reports to the Secretary of Energy through the Office of Science. The Chicago Operations Office provides support to BHG in a number of areas, including legal and contracting, as needed.

From its establishment in 1947 until January 1998, Associated Universities Incorporated (AUI) operated BNL for DOE. On May 1, 1997, the Secretary of Energy terminated the AUI contract, citing lack of public trust and weaknesses in the safety management program. On November 25, 1997, DOE announced the selection of Brookhaven Science Associates (BSA), a consortium led by the State University of New York at Stony Brook and Battelle Memorial Institute, as the new operating contractor, effective January 1998.

Occupational Medicine Program: The occupational medicine program mission is to support BHG and BSA management by providing a coordinated, high-quality, and cost effective occupational health program. The occupational medicine program is part of the integrated environment, safety, and health management system that supports BNL operations. The goal of the BNL occupational medicine program is to provide high-quality occupational medical services for employees and managers at BNL. To meet this goal, the occupational medicine program provides occupational medical services necessary to support BNL integrated safety management systems. Specific functions include ensuring employee fitness for duty, providing professional guidance in matters of health (including preventive health care and mental health), protecting individuals from health hazards in the workplace, promoting medical care and rehabilitation of ill or injured employees, and implementing the medical surveillance program.

The medical clinic staff consists of 18 full-time-equivalent (FTE) employees. The staff includes one full-time and four part-time physicians who share 3.4 FTE positions. There is one full-time nurse and three part-time nurses who share 2.8 FTE positions. Two staff psychologists share 1.5 FTE positions and are responsible for managing the employee assistance and counseling programs. 1.0 FTE is responsible for the health promotion/disease prevention program.

Approach and Methodology

In reviewing occupational medicine programs at individual sites, the Office of Oversight supplemented its internal capabilities by teaming with licensed medical physicians who specialize in occupational medicine. To obtain such expertise, the Office of Oversight teamed with the Accreditation Association for Ambulatory Health Care (AAAHC) to perform the review.

The AAAHC is a professional organization that performs surveys of medical clinics and accredits programs that have demonstrated compliance with an established set of nationally recognized standards. As part of the teaming agreement, the AAAHC supplied certified surveyors to supplement the Oversight team in the evaluation of the BNL occupational medicine program.

The AAAHC participation in this review served two purposes:

- The AAAHC performed an independent survey of the BNL occupational medicine program according to their established procedures and standards. As part of this effort, the BNL staff completed a self-assessment (called a pre-review survey in the AAAHC process) against the AAAHC standards. BNL can use the AAAHC evaluation to seek accreditation and determine the status of their medical program against national standards. It also provides BNL with AAAHC's suggestions for improvements and provides for an initial assessment of the efforts that BNL would need to perform if BNL decides to seek continuing accreditation.
- The positive attributes, weaknesses, and insights from the AAAHC survey were factored into the Oversight evaluation of occupational medicine program performance. The insights from professional AAAHC surveyors were considered, in combination with other information gathered by the Office of Oversight team during interviews and tours. In this manner, the AAAHC survey was an important component of the Office of Oversight evaluation of the effectiveness of the BNL occupational medicine program with respect to current DOE policy and requirements.

This unique approach to independent oversight provided an effective and efficient way to obtain the independent perspectives of qualified and experienced medical professionals.

Standards for the Site-Specific Review

This independent oversight review at BNL focused on the effectiveness of the Brookhaven Group (BHG) and BNL contractor line management in establishing and implementing an effective occupational medicine program, as defined by applicable DOE orders and policies. The DOE policies that specifically apply to the occupational medicine program are DOE Order 440.1A, Worker Protection Management for DOE Federal and Contractor Employees, and DOE Policy 450.4, Safety Management System. DOE Order 440.1A delineates the basic program elements necessary for an occupational medicine program. It requires that contractors use a graded approach to establish medical program requirements and utilizes supplemental orders and program guidance documents to establish specific medical program expectations and requirements. DOE Policy 450.4 defines a comprehensive and coordinated program of environment, safety, and health (ES&H) expectations and activities that are commonly referred to as integrated safety management (ISM). All site ES&H programs, including occupational medicine programs, are to be implemented within the ISM framework. Other DOE orders, such as DOE Order 151.1,

Comprehensive Emergency Management System, include requirements related to elements of occupational medicine programs.

In reviewing occupational medicine programs across the DOE complex, the DOE Office of Oversight asked the AAAHC to help identify medical program elements that are essential for high-quality patient care and measure program effectiveness against nationally recognized standards. DOE Headquarters Office of Occupational Medicine supports the accreditation process and is in the process of modifying DOE Order 440.1A to be more consistent with accreditation provisions and guidelines. Although not currently a specific requirement of DOE policy or the BNL contract, the AAAHC standards generally reflect the philosophy outlined in DOE safety management policies and are relevant to all DOE sites. The AAAHC standards emphasize the quality improvement process, which is a central theme of ISM.

Focus of the Review

Consistent with DOE policy and requirements, a comprehensive occupational medicine program performs several interrelated functions, as delineated in Figure 1. The Office of Oversight review team focused on the site's ability to accomplish each of the listed functions. Section 2.0 of this report identifies positive attributes, issues requiring attention, and conclusions regarding the overall effectiveness of the BNL occupational medicine program in meeting its objectives. Section 3.0 presents opportunities for improving the current program.

Occupational Medicine Program Functions

Consistent with DOE policy and requirements, a comprehensive occupational medicine program performs several interrelated functions:

- Clinical services. Onsite medical staff perform various routine medical procedures (e.g., physical examinations, laboratory testing) to identify and treat occupational illness or injuries, facilitate recovery and safe return to work, and refer patients for further treatment as indicated. In this regard, the occupational medicine program serves as an onsite clinic and provides timely and convenient access to medical services. In some cases, access to subsidized health services is part of employee benefits packages.
- Assess worker fitness for duty. Health evaluations are conducted to provide initial and continuing assessment of employee fitness for duty through the following examination categories: pre-placement, periodic (qualification certification) examinations, return to work, job transfer, and termination.
- Medical surveillance. DOE sites often involve hazardous materials, and the work at DOE sites can involve potentially hazardous conditions. As a result, DOE sites need to identify job categories that could involve specific radiological, chemical, biological, or physical hazards and establish a process for routine health examinations and monitoring of employees in such categories. Such a process needs to be coordinated so that the information collected is useful and available to examiners and analyzed to ensure that safety and health management has the necessary information to identify trends, protect employees, respond to requests for information from individuals and stakeholders, and ensure that accurate information is available to ensure the adequacy of the health protection program.
- Support for site efforts to monitor and control exposure to radiation and hazardous materials. DOE sites must monitor and control radiation exposure in accordance with a radiation protection plan. Such efforts often require various methods for measuring radiation exposure (e.g., whole body counts) that may be performed on a routine basis or to determine the extent of exposure or appropriate medical treatment after an incident. Similarly, DOE sites must comply with various Federal and state regulations related to worker safety and hazardous materials (e.g., Occupational Safety and Health Administration requirements for protection against exposure to hazardous substances). The occupational medicine program must coordinate with other site organizations to ensure that site hazards are identified and that appropriate measures to mitigate hazards are in place.
- Support for emergency management preparedness and response. DOE sites must be prepared to handle
 emergencies and unplanned releases of radioactive or hazardous materials. Occupational medicine programs
 need to be able to provide support during an emergency situation; for example, by providing treatment to
 injured workers, coordinating support with local hospitals, ensuring that information about hazardous
 materials is readily available to medical personnel who treat exposure victims, and providing
 recommendations for protecting the public.
- Information management. To perform the functions noted above, DOE sites must maintain health information about hazardous materials and employees potentially exposed to those hazards. Many of the materials used at DOE facilities and laboratories, such as plutonium and beryllium, pose significant health risks and are not commonly encountered in general industry. Thus, they may be unfamiliar to community health care providers in the event of an accidental exposure. Occupational medicine program personnel must also be involved in keeping track of the types of hazardous materials at the site and their health effects, documenting worker exposures, recommending treatments, and informing management about the effectiveness of safety and health programs.

Figure 1. Functions of a Comprehensive Occupational Medicine Program

2.0 RESULTS

The following results from the BNL occupational medicine program review are a combination of the AAAHC survey findings, which determines compliance with national ambulatory health care standards, and the Office of Oversight review, which determines the effectiveness of DOE contractor occupational medicine programs. Both reviews reflect the principles of ISM, including: identification of roles, responsibilities, and accountabilities; identification of requirements; quality management and improvement; and performance assessment and feedback mechanisms to promote continuous improvement. The Office of Oversight will consolidate these results and the results from the reviews at other sites in a final report that will identify generic issues. These generic issues are intended to help improve the DOE contractor occupational medicine programs and DOE program and field office management and direction of contractor activities.

Positive Attributes

- 1. The BNL occupational medicine program achieved substantial compliance with most AAAHC standards. The AAAHC surveyor determined that the BNL occupational medicine program was substantially compliant in 12 of 13 standards that were applicable to the occupational health services provided by the BNL clinic. The quality management and improvement standard, which was rated as partially compliant, is expected to improve as the quality improvement and peer review programs mature. The survey results were forwarded to the AAAHC accreditation committee for review. In March 1999, the AAAHC informed BNL that it had been awarded accreditation for a one-year term. Appendix A provides additional details from the AAAHC survey report. The generally good performance by BNL with regard to nationally recognized standards indicates that the BNL clinical staff provide high-quality medical care to employees, diagnostic services are comprehensive, and employees are treated in a professional manner.
- 2. The BNL occupational medicine program is actively participating in the development of a standards-based management system (SBMS). The SBMS, scheduled for completion in fiscal year 2000, is intended to ensure sitewide ownership and accountability for the safety and health of all BNL employees. The program is intended to include comprehensive directives and descriptions of specific programmatic functions, services, and responsibilities so that the requirements of DOE Order 440.1A are clearly identified, understood, and communicated by BHG and Brookhaven Science Associates (BSA) safety and health management. The BNL medical director has developed documentation to support medical program functions for SBMS and is positioned to interface with safety, industrial hygiene, health physics, emergency management, and line management to ensure that medical program requirements will continue to be integrated within the SBMS framework.
- 3. Hazard analysis processes have been improved to better identify and control hazards. The recent revisions of the BNL work control process and experimental review process have contributed to an increased awareness of the need to identify, understand, and control hazards that may be associated with all activities at BNL. The hazard screening guidelines and hazard analysis checklists, available on line, are designed to help ensure that the proper safety/hazard analysis is considered before any work or experimental activities begin.

4. BNL safety professionals, the BNL occupational medicine program, and Laboratory management have effectively teamed to identify employee health issues and make improvements. The formalization of the medical case management program is an excellent example of how the BNL medical program has coordinated with Laboratory management and safety personnel to solve a Laboratory-wide problem. Increased workers' compensation costs, excessive lost workdays by employees, and less-than-adequate analysis of the causes of these problems have motivated management to seek a solution. Safety personnel, medical clinic staff, and line management jointly monitor the causes of employee injuries, the most efficient course of treatment, the workers' compensation benefit process, and the new Laboratory restricted-work policy, which helps employees safely return to work after a work-related injury or illness.

Weaknesses and Issues Requiring Attention

- 1. The SBMS has not fully addressed the integration of line management and medical program responsibilities as indicated in the contractor occupational medicine program requirements and responsibilities. At this stage of development, the SBMS documentation does not specifically describe line management's roles and responsibilities as they relate to the occupational medicine program. Line management needs additional information about how to identify workplace hazards that may be associated with potential health effects. Specific references to requirements that identify how and when employees should be included in medical surveillance programs are not fully developed. The medical staff needs to further integrate medical program directives and communicate their approaches for assisting line management in determining the health effects that may be associated with workplace hazards and determining whether medical surveillance programs are required for employees.
- 2. BHG and BSA do not have formal programs for assessing line management's implementation of their occupational medicine program responsibilities. ISM principles require that performance assessment and feedback for occupational medicine program elements, such as hazard identification, employee medical surveillance requirements, and job hazard analysis, are effective for individual BNL employees. The internal BNL medical program self-assessments and quality management studies have not addressed line management's role in this process. In addition, ES&H management has not included the integration of occupational medicine program elements in any formal performance assessment programs.
- 3. The occupational medicine program is not adequately integrated with the emergency management program. Occupational medicine program staff have not participated in any recent emergency management drill and exercise activities at the site or community level. The medical elements of the site emergency plan need to be integrated into emergency management drills and exercises. There is also a need to consider mass casualty situations, the clinic's role in emergency medical response, triage capability, staff training and communication, and coordination with local medical facilities.

Conclusions

BHG and the new BNL contractor, BSA, are focusing on improving laboratory management, restoring confidence in the safety and health program, and establishing a comprehensive ISM

program. The partnership agreement between BHG and BSA is a positive step toward developing a framework for cooperation based on shared values, objectives, and goals. BHG and BSA have been successful in establishing an effective occupational medicine program, as evidenced by the high ratings on 12 of 13 AAAHC program elements.

Although the occupational medicine program has many positive attributes, additional attention is needed to ensure that performance assessments of occupational medicine program elements are formalized and effective. BHG and BSA management need to ensure that sitewide programs associated with worker protection, worker health, and the effectiveness of the site occupational medicine program are integrated into the existing ES&H assessment processes. Specifically, the facility and programmatic assessment processes need to continually validate line management's ability to recognize hazards, identify employees associated with those hazards, and implement a comprehensive medical surveillance program. Management attention is also needed to ensure that occupational medicine program personnel coordinate effectively with emergency management program personnel, including participation in exercises, and that emergency management plans and procedures effectively address occupational medicine issues.

BHG and BSA are in the process of developing and implementing programs, such as the SBMS, that have the potential to improve BNL ES&H programs, including the occupational medicine program. Occupational medicine program personnel have actively participated in the SBMS initiative and are drafting occupational medicine management system descriptions for key functions, services, and processes. Although a promising initiative, the SBMS has not yet adequately addressed the integration of occupational medicine program requirements and the responsibilities of line management. Recognizing that the hazards and risks of most of the work performed at BNL will be categorized as low to moderate, it will be important to maintain a formalized process for identifying higher-level hazards, tracking employees who might encounter those hazards, and identifying individuals who should be included in medical surveillance programs. Effective coordination among medical program staff, line managers, and safety professionals will also be important to ensure that medical program staff review hazards assessments (including work permit activities and the experiment review process) when potential health effects have been identified. The ongoing development of documentation to support the SBMS is an ideal opportunity to ensure that appropriate references to medical program requirements are included in site-level documents, including documents that address hazard identification, medical surveillance requirements, and employee protection controls.

In summary, although some elements need additional attention, BNL has most of the elements of an effective occupational medicine program in place and is making improvements through the implementation of ISM and the SBMS. The effectiveness of these ongoing initiatives needs to be monitored to ensure that they achieve their objectives and effectively address remaining occupational medicine issues.

3.0 OPPORTUNITIES FOR IMPROVEMENT

The review identified opportunities for improvement in three major areas: BHG oversight, BSA assessments, and occupational medicine program interfaces. The potential enhancements are not intended to be prescriptive. Rather, they are intended to be reviewed and evaluated by DOE and contractor line management, and modified as appropriate to meet DOE and site-specific objectives and expectations.

BHG should consider the need to regularly monitor the integration of occupational medicine program requirements into BNL ES&H programs. As one mechanism for improving BHG oversight, BHG could accelerate efforts to enhance the Facility Representative program by ensuring that one or more Facility Representatives is knowledgeable about DOE occupational health issues and is responsible for monitoring the BNL occupational medicine program. The BHG Facility Representative program could also help ensure that health issues are addressed within operational awareness activities that have been designed to monitor ES&H effectiveness. The Facility Representative surveillance program could develop methods to monitor line management's ability to recognize hazards, communicate potential health effects resulting from those hazards, and identify employees who might encounter hazards during the course of work activities or planned experimental research.

Increased attention is needed to ensure that occupational medicine program responsibilities and requirements are addressed within BSA's sitewide assessment programs. Safety and health performance assessment programs should place more emphasis on evaluating line management's ability to identify hazards, determine which employees could be exposed to those hazards, determine which hazards may pose health effects, and identify employees who must participate in medical surveillance programs. Line management and ES&H management should establish mechanisms for getting regular feedback on how effectively occupational health program requirements are addressed.

The interfaces between BNL occupational medicine program requirements and line management's responsibilities for protecting the health of employees should be more clearly defined and documented as the BNL SBMS and ISM program mature. Draft management system descriptions of the medical clinic operation are being developed to describe the medical clinic functions and responsibilities. However, more work is needed to describe how industrial hygiene and occupational medicine can help line management identify workplace hazards and how occupational medicine can provide medical surveillance. In addition, more work is needed to describe how line management should implement their responsibility for communicating information on health hazards to the medical staff.

APPENDIX A

ACCREDITATION ASSOCIATION FOR AMBULATORY HEALTH CARE, INC. SURVEY COMMENTS BROOKHAVEN NATIONAL LABORATORY OCCUPATIONAL MEDICINE PROGRAM

Introduction

As part of the normal survey process, the Accreditation Association for Ambulatory Health Care (AAAHC) provides detailed evaluation results to the site. The AAAHC results include a rating (i.e., substantially compliant, partially compliant, or non-compliant) for each of the applicable standards. The standards published in the "Accreditation Association Handbook for Ambulatory Health Care" describe organizational characteristics that AAAHC believes to be essential for high-quality patient care. For those standards that are partially compliant or non-compliant, the surveyor provides written comments about the observed weakness.

The AAAHC report for Brookhaven National Laboratory (BNL) consisted of approximately 119 pages of completed evaluation forms, which include supporting comments. The AAAHC also identified a set of potential improvements that would strengthen the BNL occupational medicine program and correct weaknesses noted during the survey. The Office of Oversight developed the following summary of the AAAHC comments. The actual survey results will be provided to the BNL medical director for review and comment when this report is distributed.

AAAHC Assessment

The BNL occupational medicine program was in substantial compliance with 12 of 13 standards determined to be applicable to the AAAHC accreditation process. The areas of substantial compliance were:

- Rights of patients
- Governance
- Administration
- Ouality of care provided
- Clinical records
- Professional improvement
- Facilities and environment
- Pharmaceutical services
- Pathology and medical laboratory services
- Diagnostic imaging services
- Occupational health services
- Other professional and technical services.

The area of partial compliance was quality management and improvement (peer review and quality improvement programs). No areas of non-compliance were identified during this survey.

The surveyors indicated that BNL had a good occupational medicine program and an excellent medical director. The surveyors also indicated that BNL had the potential to establish an outstanding program as the medical program staff become more familiar with the accreditation criteria and as new processes have a chance to mature (peer review and quality studies).

The following paragraphs summarize AAAHC comments related to specific standards.

Governance

Peer review is performed informally by two primary physicians. No record of peer review outcomes is kept in the physician credential file. There are no goals for the annual physician performance review process. The medical director expects to formalize the peer review process in the future. Physicians should provide evidence of present compliance with current license, education, and training requirements and Drug Enforcement Administration certification.

BNL tries to send the physicians, psychologists, and one nurse to a national meeting each year. Budget cuts are threatening this policy. However, staff are given time off for local professional related meetings.

Bathroom facilities located in the BNL medical clinic are not handicapped-accessible. It was recommended that the governing body be responsible for fulfilling obligations under the Americans with Disabilities Act.

Quality Management and Improvement

Prior to the accreditation survey, the medical clinic only conducted audit-type studies. In preparation for the AAAHC survey, BNL formed a Quality Assurance and Safety Committee and conducted studies consistent with AAAHC criteria. The AAAHC recommended that BNL provide ongoing monitoring of important aspects of medical care provided; collect data related to established criteria on an ongoing basis; periodically evaluate the collected data to identify unacceptable trends that influence patient outcomes; and evaluate problems or concerns to determine whether corrective measures have resolved the original problem or concern. The results of these studies should be regularly reported to the governing body.

The results of peer review should be used as part of the basis for granting continuation of clinical privileges within the annual employee evaluation process.

Risk management for the clinic is performed informally. BNL should consider some in-service education about risk management issues.

Clinical Records

Stickers identifying patient allergies to medications or other substances were not consistently placed on employee medical charts, and allergies were not recorded in any obvious place in the chart.

Professional Improvement

The BNL clinic is located close to university and hospital libraries. The staff have Internet access from the clinic and subscribe to medical journals. The clinic currently pays for professional improvement, but this portion of the budget is continually threatened.

Facilities and Equipment

The emergency generator for the medical clinic is tested with and without load monthly.

All staff are trained in the practice of extinguishing small fires.

Nurses are BCLS (basic cardiac life support) certified.

X-ray and biohazard waste is controlled and disposed of properly.

Occupational Health Services

The medical director is Board-certified in occupational health.

The BNL medical program has an active medical case management program.

The BNL training department provides for hazard communication training and other safety-related training requirements. Bloodborne-pathogen training is conducted by an outside consultant.

An active wellness and employee assistance program is available to employees and their families.